Armed Forces College of Medicine

AFCM

Inflammatory Bowel Diseases & Diverticular Disease

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INTENDED LEARNING OBJECTIVES (ILO)

By the end of this lecture you will

- Describe the pathology and complications of inflammatory bowel diseases (Ulcerative colitis & Crohn’s disease)
- Compare between Ulcerative colitis & Crohn’s disease
- Summarize pathology & complications of diverticular disease
- Correlate pathologic features of IBD and diverticular disease with their clinical picture and complications

Lecture Plan

1. Part 1 (15 mins): Crohn’s
2. Part 2 (20) :Ulcerative & comparison with Crohn’s disease
3. Part 3 (10): Diverticular disease
4. Lecture Quiz (5 min)

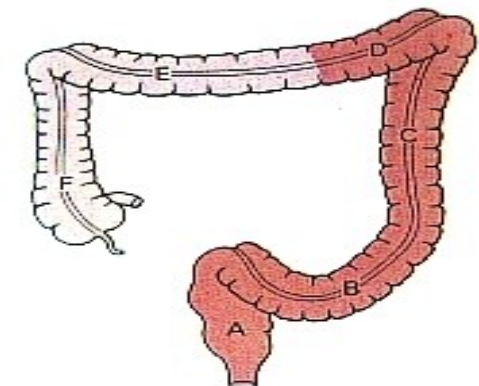
INFLAMMATORY BOWEL DISEASES (IBD)

Def :Idiopathic chronic inflammatory diseas

Crohn's disease

- **Affects Small intestine (ileum)**
- **+ parts of large bowel**
- **± any other part of GIT**

Ulcerative colitis

- **Limited to colon**

INFLAMMATORY BOWEL DISEASES (IBD)

Etiologic factors

Several non-confirmed factors are claimed as:

- Genetic factors
- T-cell dysfunction
- Epithelial defects.
- Immune mediated damage

Crohn's Disease

C/P:

- ➢ Fever
- ➢ Abdominal pain
- ➢ Attacks of diarrhea & bleeding
- ➢ Asymptomatic intervals
- ➢ Weight loss
- ➢ Malabsorption symptoms
- ➢ Extraintestinal manifestations (see

Characteristic features :

- Sites : terminal ileum, ileocecal valve & cecum
- **Skip lesions** = multiple ,separate sharply delineated areas of disease (segments of normal intestine between affected regions)

Crohn's Disease

Gross:

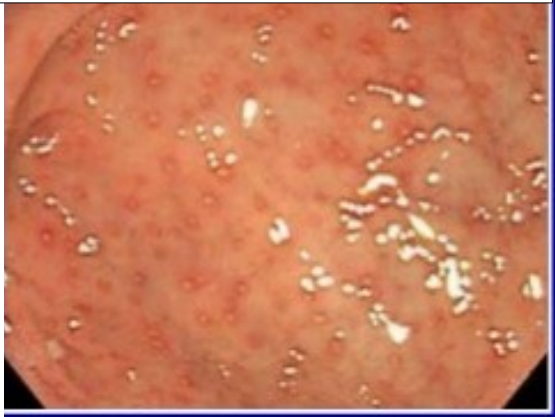
1. **Aphthous ulcers**: earliest lesion, multiple & coalesce into elongated, **serpentine ulcers**.

2. **Cobblestone appearance:** due to edema, inflammation & loss of normal folds sparing normal mucosa in between .

3. **Fissure ulcers:** deep linear defect or fissures may extend deeply to become sites of perforation or fistula tracts

4. **Wall : thickened** with **narrow lumen** due to edema, inflammation-fibrosis- hypertrophy of muscularis propria

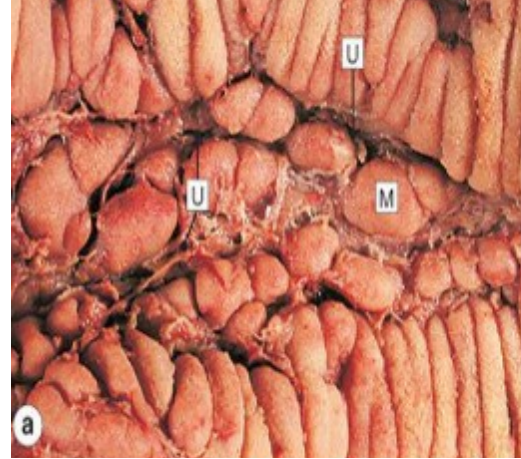
Crohn’s Disease

Aphthous ulcers

Lee YJ et al. Endoscopy 2006 ;38:592-597

Serpentine ulcers

https://ak47boyz90.files.wordpress.com/2010/08/l4-151.png?w=510

Cobblestone appearance

https://www.webpathology.com/image.asp?n=5&Case=204

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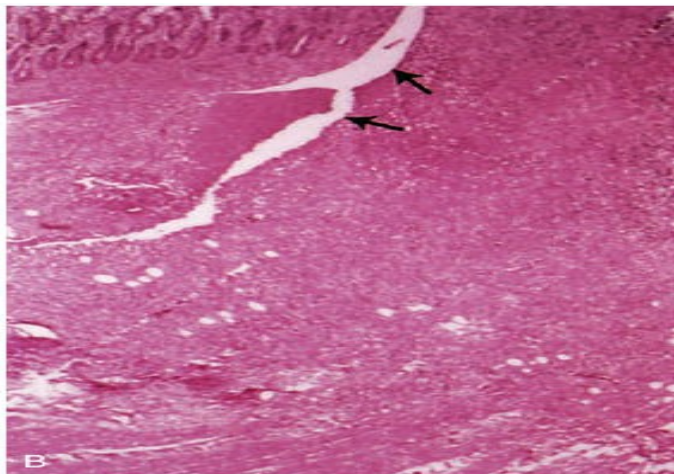
Fissure ulcers

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Wall : thickened

Crohn’s Disease

Skip lesions

Serpentine ulcers

Cobblestone

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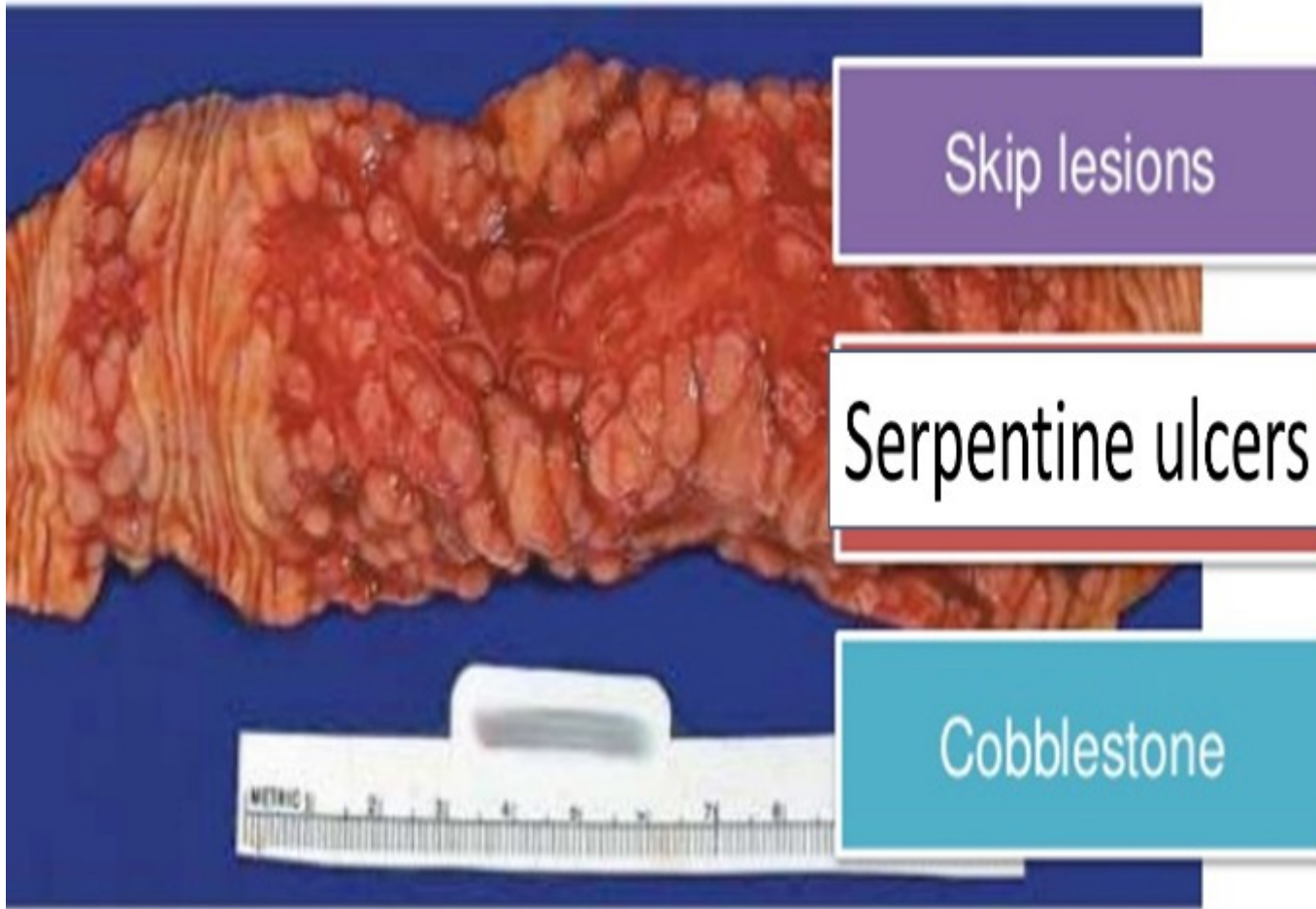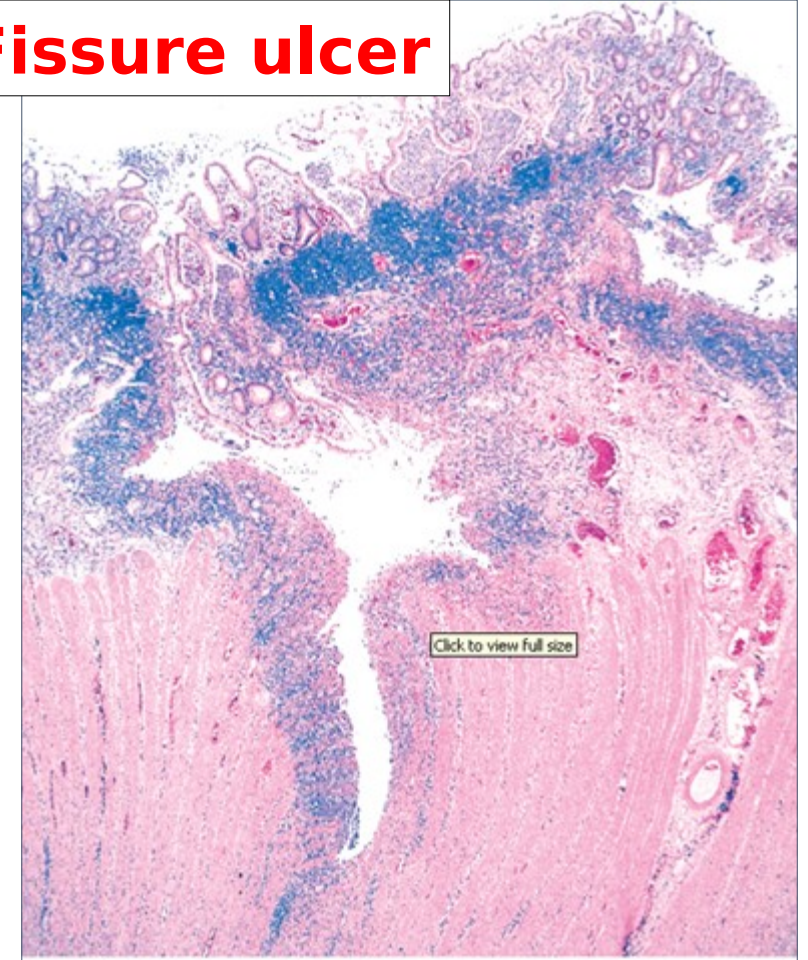
Crohn’s Disease

Mic:

1. Cryptitis & crypt abscesses
2. **Transmural** chronic inflammation
3. Mucosal **fissure ulcers.**
4. **Non-caseating granulomas.**

https://www.researchgate.net/publication/305804970/figure/fig2/AS:391282900914179@1470300521359/Descending-colon-biopsy-This-histologic-section-from-the-descending-colon-taken-9.png

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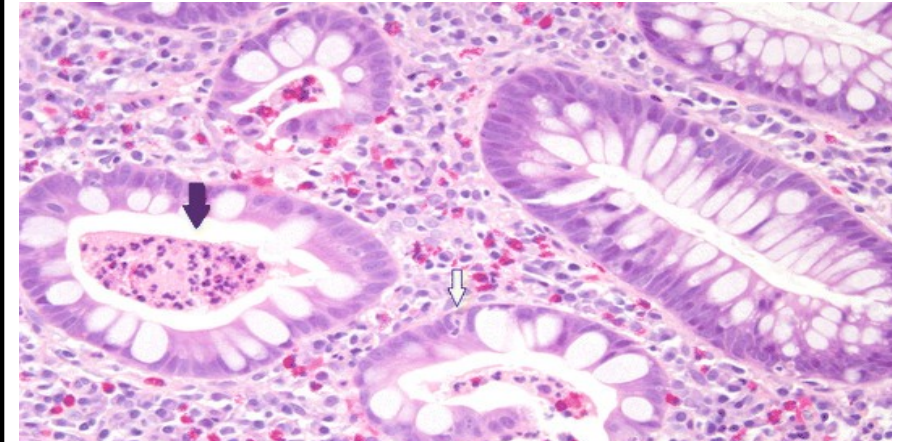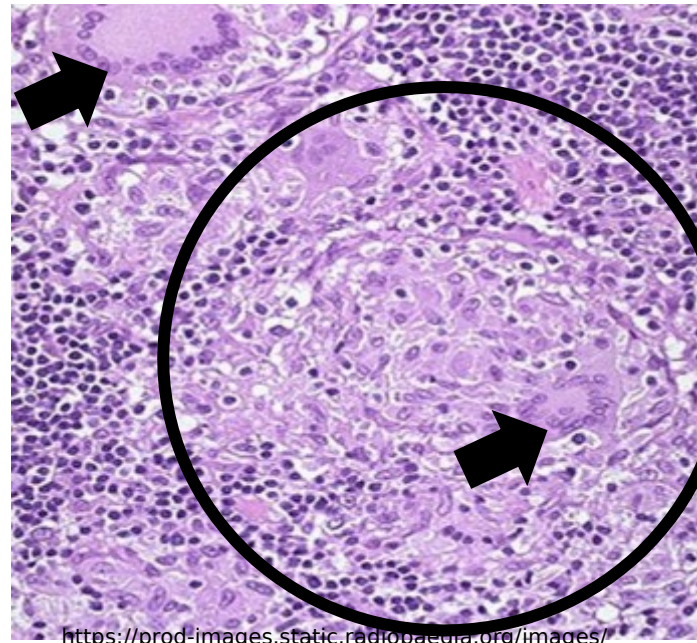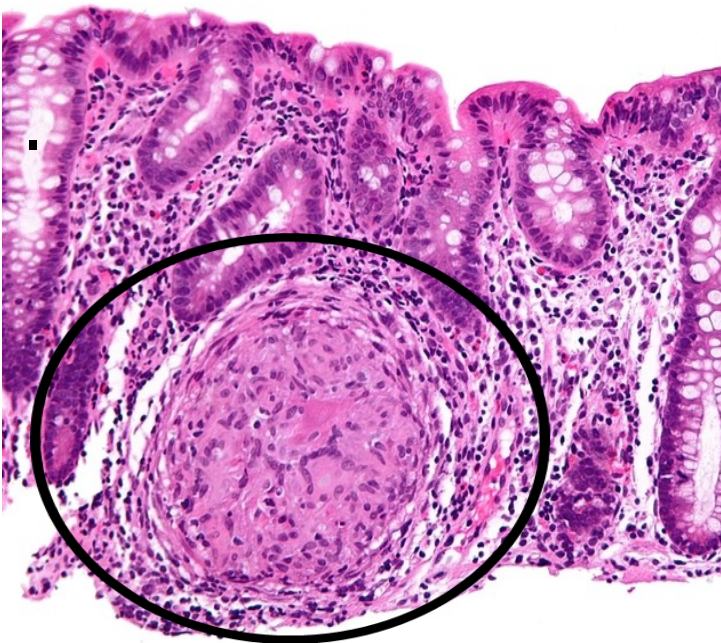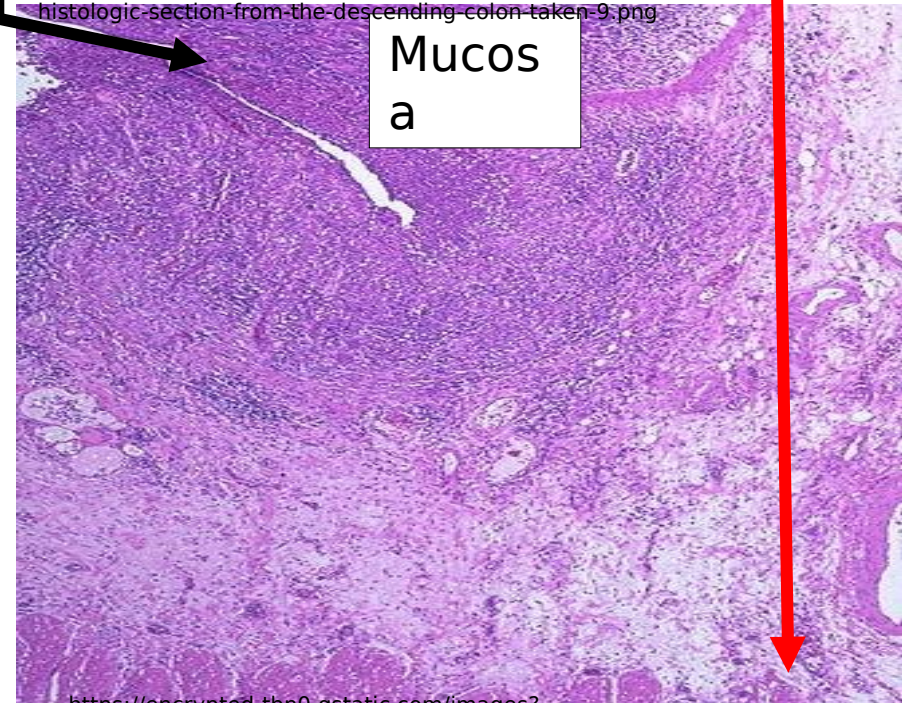
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Crohn's Disease

Complications:

1. **Malabsorption**
2. Intestinal bleeding
3. Perforation
4. Fibrotic strictures (String sign" on barium studies)
5. **Fistulas**
6. Risk of intestinal cancer

http://www.ijcasereportsandimages.com/archive/2013/012-2013-ijcri/019-12-2013-gutierrez/figure2.gif

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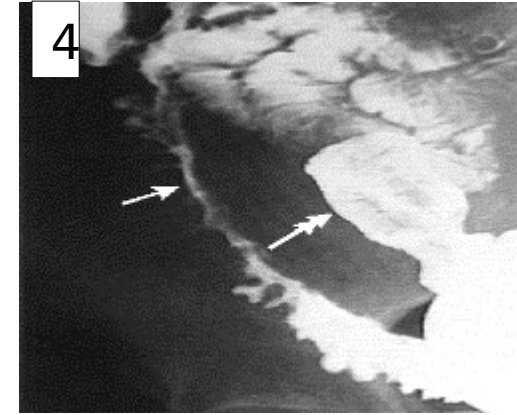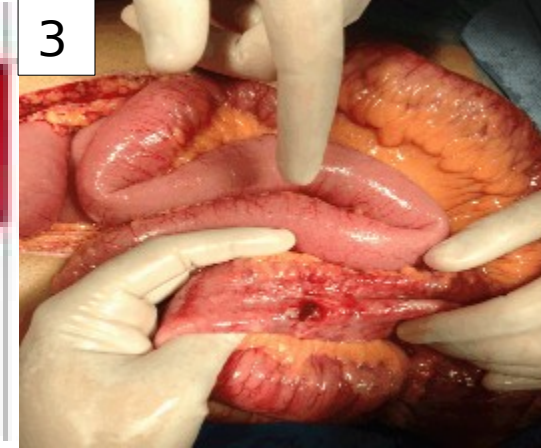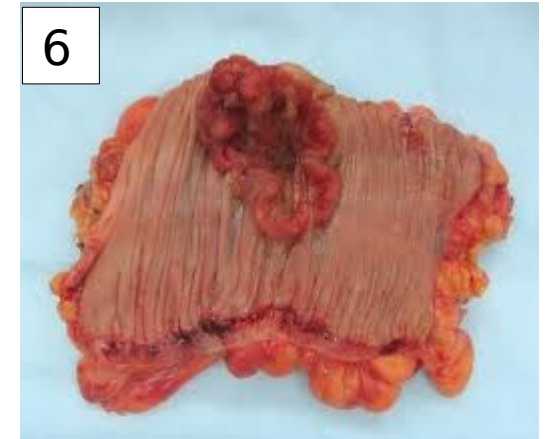
https://upload.wikimedia.org/wikipedia/commons/thumb/c/cc/Colon_cancer_2.jpg/300px-Colon_cancer_2.jpg

+Extraintestinal manifestations

Crohn’s disease (Quiz)

Which of the following is a microscopic feature of Crohn’s disease?

a. Absence of ganglion cells in colon
b. PAS positive macrophages in lamina propria
c. Multiple caseating granulomas
d. Transmural chronic inflammation

Crohn's disease (Quiz)

Which of the following is a microscopic feature of Crohn's disease?

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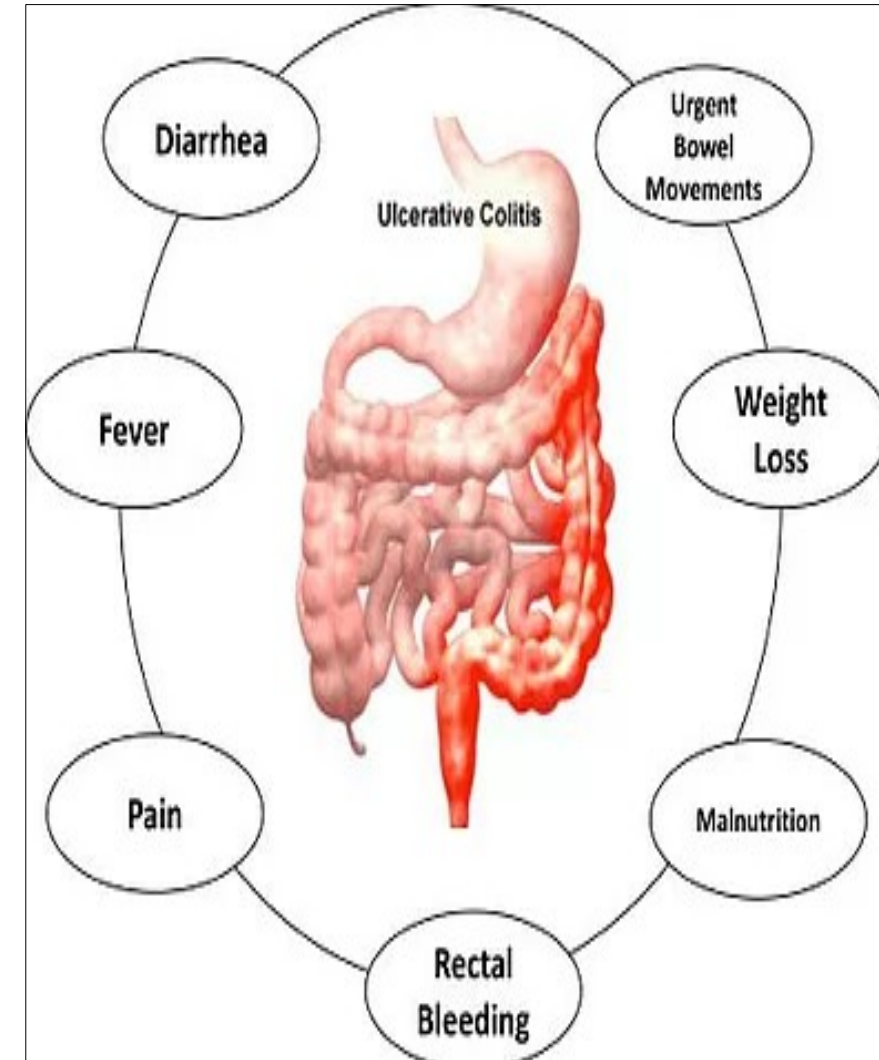
b. PAS positive macrophages in lamina propria
c. Multiple caseating granulomas
d. Transmural chronic inflammation

Ulcerative Colitis

C/P

- Fever
- Diarrhea
- Abdominal cramps abdominal pain
- Episodes of Intestinal bleeding
- Periods of active phase & periods of remission
- Extraintestinal manifestations (see later)

Ulcerative Colitis

Characteristic feature:

- **Involves Rectum**
- **may** extend proximally to involve whole colon

  =PANCOLITIS

- Back-wa
  directio

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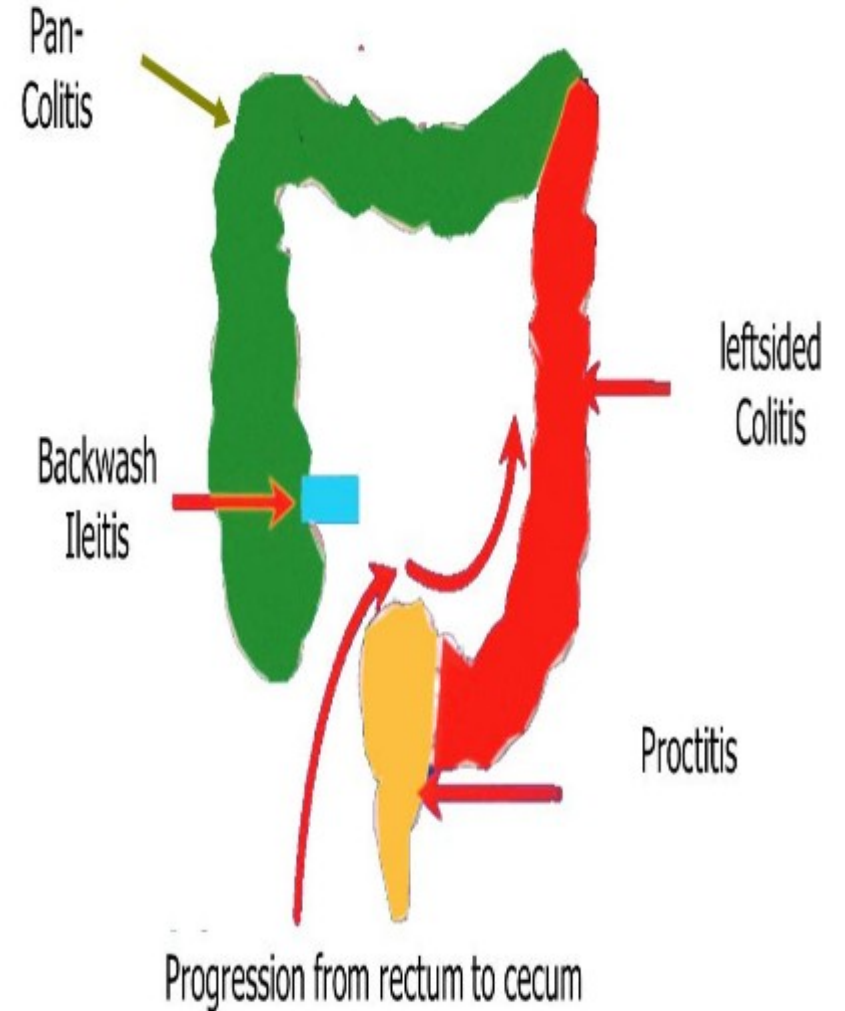
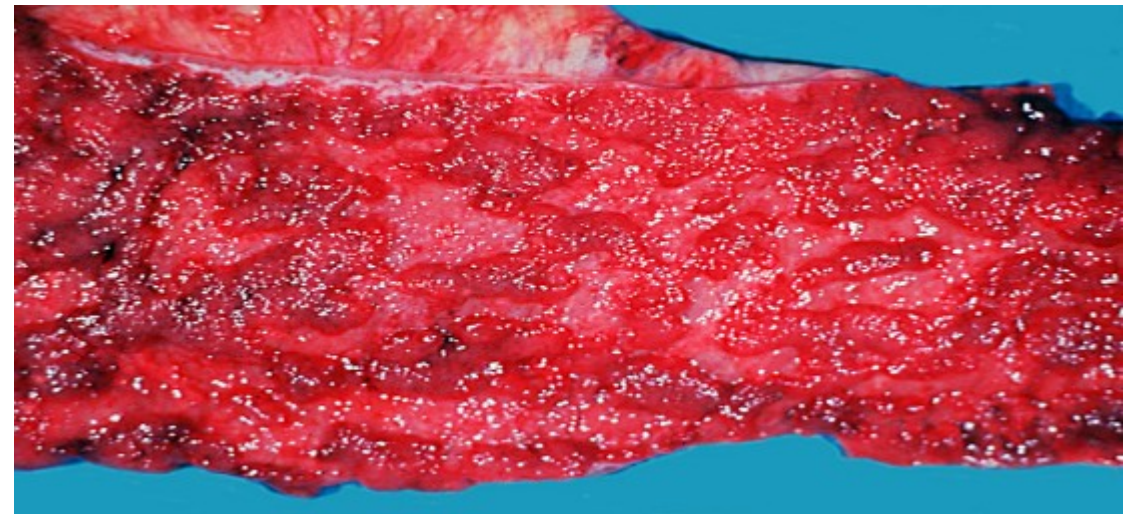

Ulcerative Colitis

Gross:

- Mucosa:
  - ➢Red-Granular-Friable
  - ➢Ulcers
  - ➢Inflammatory Pseudopolyp
  - ➢Or atrophic &flat
- Disease of continuity= No skip lesions

D:\work For AFCM\Hepatobiliary Flinal 2 AFCM 19-20\ulcerative add next year.mhtml

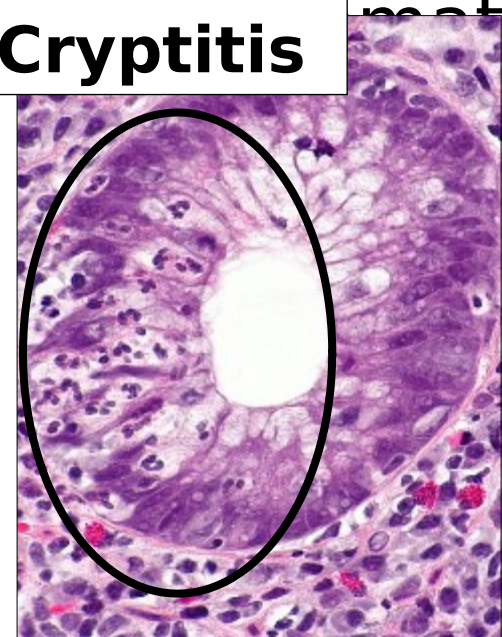
https://www.webpathology.com/image.asp?n=8&Case=219

https://medpics.ucsd.edu/images/path_640/gi1/path_gi1_006_00.jpg

Ulcerative Colitis

Mic:

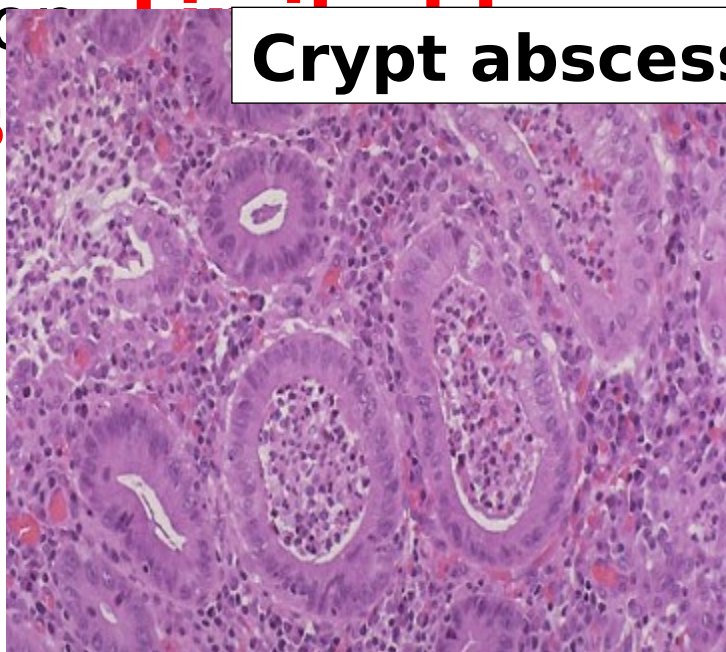
- Ulceration
- Cryptitis & crypt abscess more prominent
- Goblet cell depletion

Ulceration

https://img.medscape.com/thumbnail_library/ps_150521_ulcerative_colitis_800x600

Cryptitis

https://librepathology.org/w/images/thumb/c/c9/Cryptitis_-_alt_--_very_high_mag.jpg/450px-Cryptitis_-

Crypt abscess

https://webpath.med.utah.edu/jpeg4/GI183.jpg

Goblet cell depletion

Crypt abscess

https://www.pathpedia.com/education/eatlas/histopathology/intestine_large/colitis_ulcerative/colitis_ulcerative_co076_1.jpeg?Width=600&Height=450&Format=4

Ulcerative Colitis

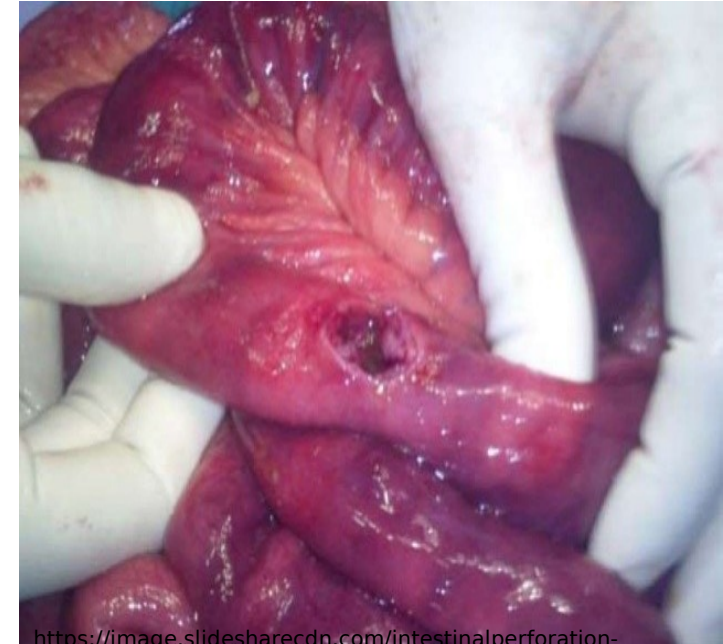
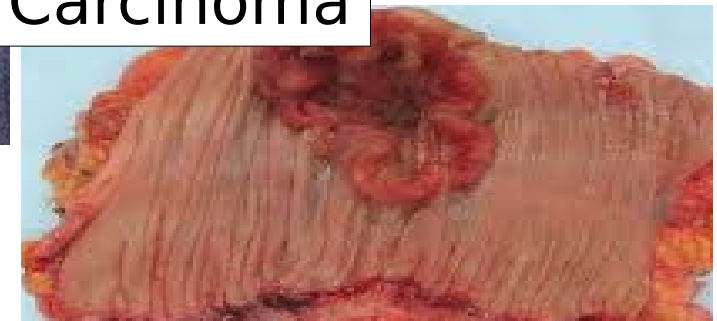
Complications

1. Colonic bleeding
2. **Toxic megacolon**
3. Perforation
4. Carcinoma

Toxic megacolon

https://medizzy.com/feed/488907

Perforation

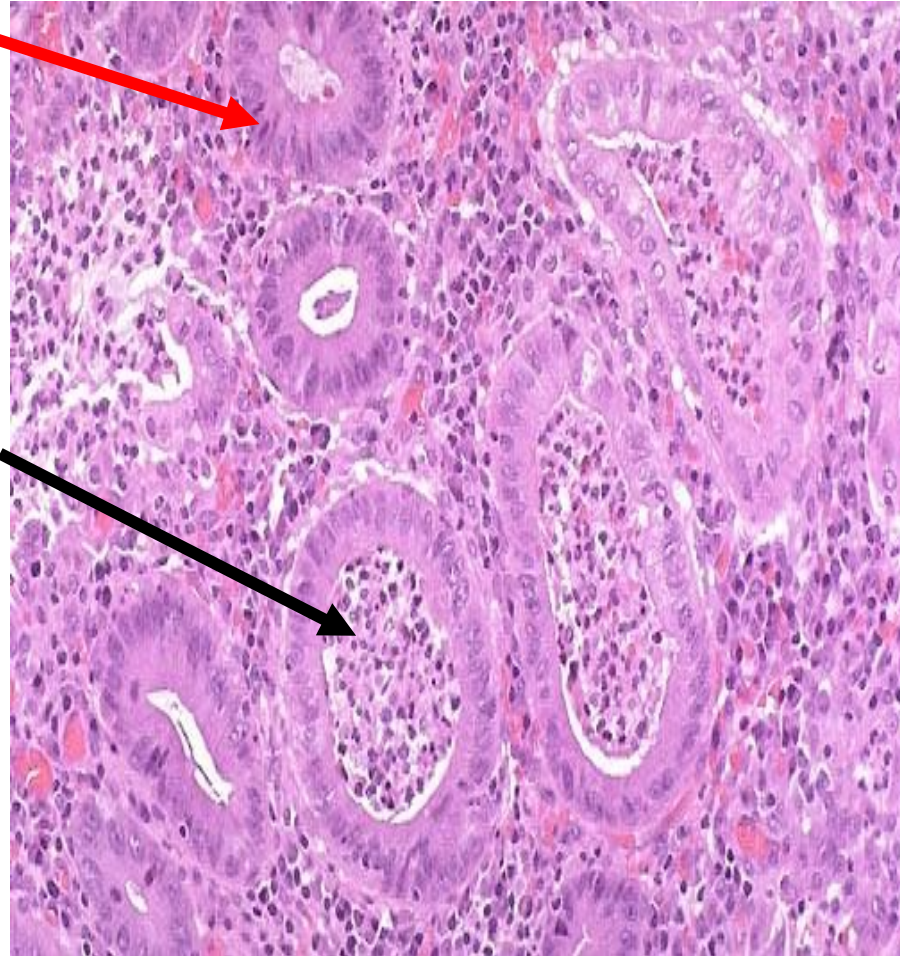
https://image.slidesharecdn.com/intestinalperforation-160405183427/95/intestinal-perforation-2-638.jpg?cb=1459881335

Carcinoma

https://upload.wikimedia.org/wikipedia/commons/thumb/c/cc/Colon_cancer_2.jpg/

Ulcerative colitis (Quiz)

black arrow points to

Crypt abscess

red arrow points to

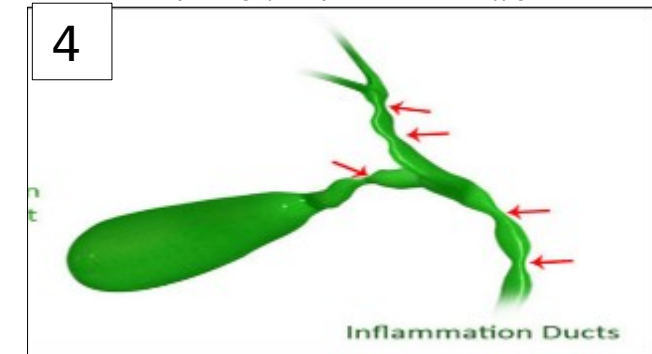
Goblet cell depletion

Extra intestinal manifestations in IBD

1. Migratory arthritis,
2. Ankylosing spondylitis
3. Uveitis
4. Primary sclerosing cholangitis
5. Pyoderma gangrenosa or Erythema nodosum
6. Secondary amyloidosis

https://www.verywellhealth.com/thmb/FNpkfBBh74BCL9TVg1FNeejgFr4=/768x0/filters:no_upscale():max_bytes(150000):strip_icc()/GettyImages-185081622-

https://qualmedicaresearch.com/wp-content/uploads/2018/12/AnkylosingSpondylitis-1080x675.jpg

https://i0.wp.com/images-prod.healthline.com/hlcmsresource/images/galleries/uveitis/4067-Uveitis-642x361-anterior_uveitis_slide1.jpg?w=1155

http://drvikram.com/images/primary-sclerosing-cholangitis.jpg

https://upload.wikimedia.org/wikipedia/commons/1/12/Crohnie_Pyoderma_gangrenosum.jpg

INFLAMMATORY BOWEL DISEASES (IBD)

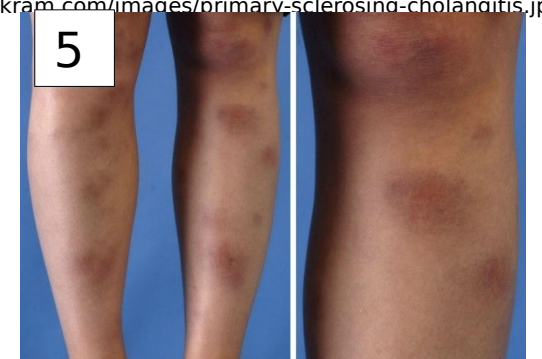
Revis

Crohn's

Stricture & Fissure ulcers

Cobble stone

Transmural infl.

Skip lesions

Ulcerative colitis

Superficial ulcers

pseudopolyps

Mucosal & submucosal infl.

Continuous

Pseudopolyp

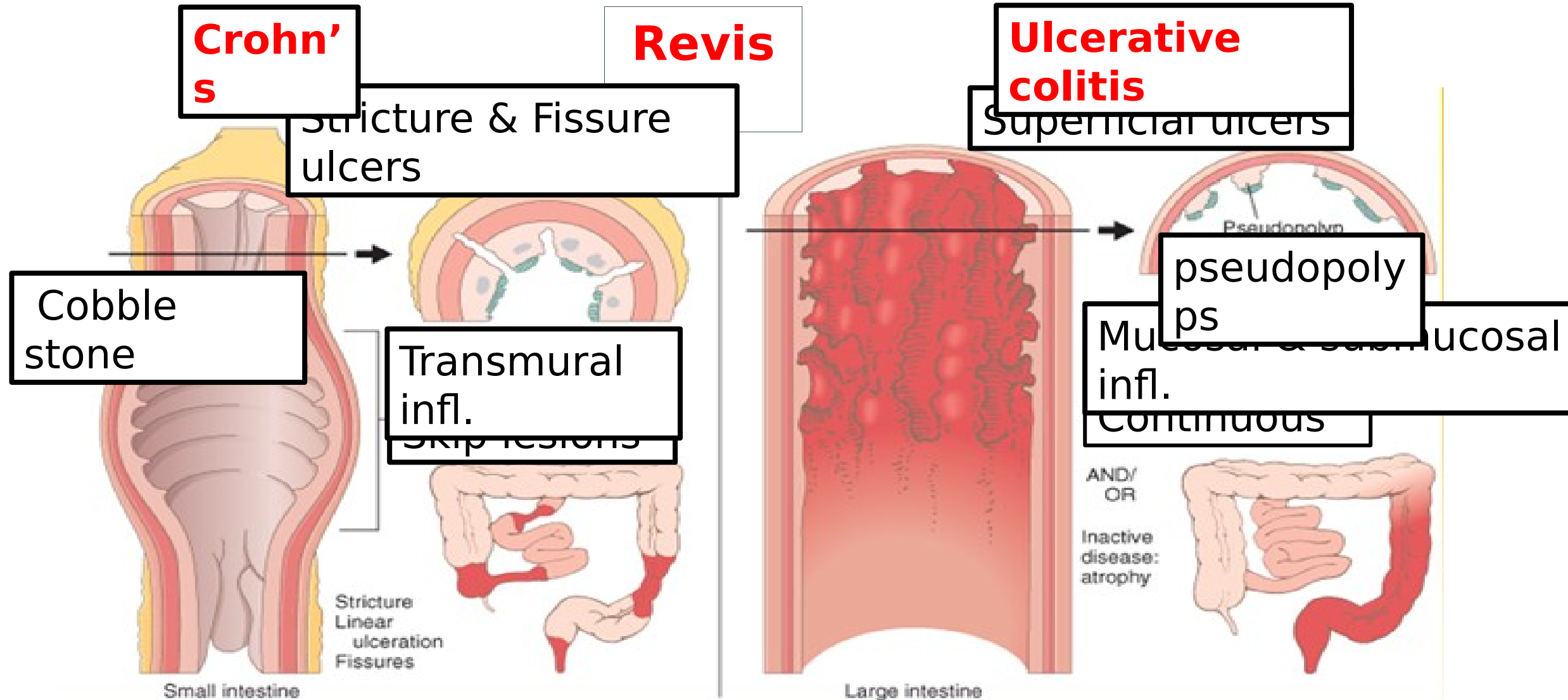
AND/ OR

Inactive disease: atrophy

Stricture
Linear ulceration
Fissures

Small intestine

Large intestine

INFLAMMATORY BOWEL DISEASES (IBD)

- **Diagnosis of IBD requires**

  - Endoscopic biopsy
  - Clinic-pathological correlation.

- Both can predispose to colorectal carcinoma

Inflammatory bowel disease (Quiz)

Compare between

Crohn's

Ulcerative

	Crohn's	Ulcerative colitis
Gross: - site - **Skip lesions** - Wall -**Stricture** - Dilatation - **Pseudo polyp**		
Mic: - ulcers - **Fistula** - **Granuloma** - Fibrosis		
Clinically: - **Malabsorption ?** - **Malignant**	Poor why	Good

	Crohn's	Ulcerative colitis
Gross:		
- site	**Ileum then colon**	**Rectum + rest of colon**
- **Skip lesions**	√	X (continuous)
-Wall	Thick	Thin
-**Stricture**	Early	rare
- Dilatation	X	√ **Mega colon**
- **Pseudo polyp**	+/-	√
Mic:		
- ulcers	**Deep (fissure)**	**Superficial**
- **Fistula**	√	X
- **Granuloma**	√	X
- Fibrosis	√	mild
Clinically:		
- **Malabsorption ?** - **Malignant**	√ = **Poor -why?**	X = Good

Diverticular Disease of the Colon

Def & Pathogenesis:

- **Acquired herniation of mucosa & submucosa**
- **Due to elevated intraluminal pressure**
- **Through weak spots in muscle layer on mesenteric border**

– **(where mesentery is penetrated by arteries,**
between tenia coli).

Predisposing factors:

- **Weakness in intestinal wall due to senility**

https://image.slide combined03clinica pathologybenignd phpapp02/95/com benigndiverticular cb=1315567842

https://i0.wp.com/images-prod.healthline.com/hlcmsresource/images/topic_centers/2019-3/11380-Diverticulitis101-SymptomsCausesandTreatment-732x549-thumbnail.jpg?w=756&h=567

https://media.sciencephoto.com/image/m1400442/800wm

Diverticular Disease of the Colon

C/P

- Constipation alternating with diarrhea
- Abdominal cramps
- Occult bleeding or haemorrhage

Complications

1- Secondary infection diverticulitis
2- Diverticulitis Bleeding per rectum
 Pericolic Abscess
 Perforation & peritonitis
 Fibrous stricture (healing)

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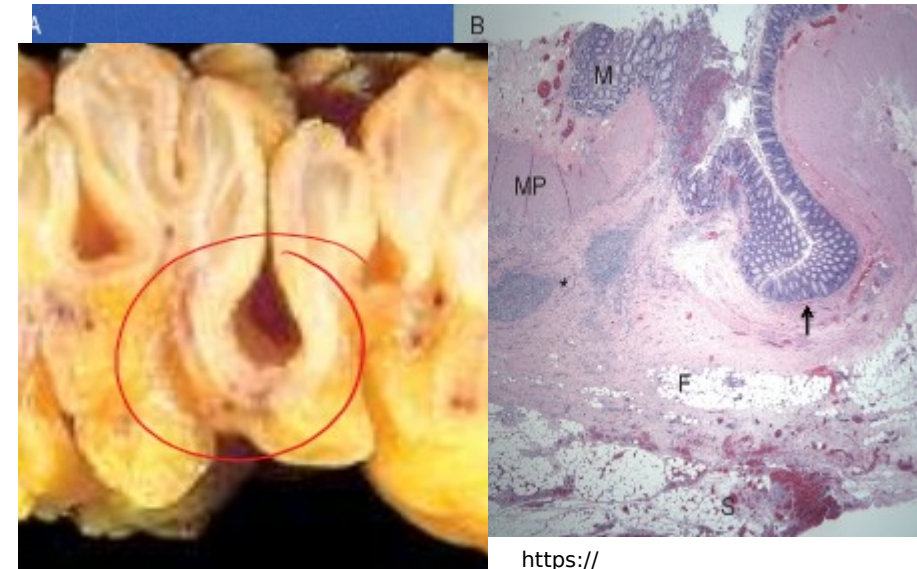
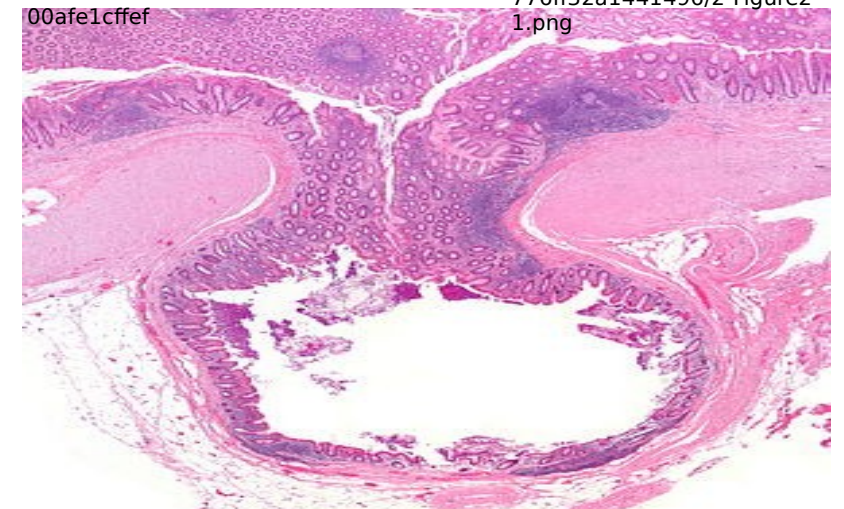
https://d3i71xaburhd42.cloudfront.net/1da333452284283dde6c481cb776ff32a1441496/2-Figure2-1.png

_very_low_mag.jpg/300px-Diverticulum_-_very_low_mag.jpg

Diverticular Disease of the Colon

Pericolic Abscess

https://radiologykey.com/wp-content/uploads/2016/11/image06783.jpeg

Perforated diverticulitis

https://prod-images.static.radiopaedia.org/images/27813498/b7c07605be522b3971b3535fddc0b0_ju

Inflammatory bowel disease and Diverticular disease of colon (Quiz)

Acquired herniation of mucosa & submucosa through colonic muscle layer is a feature of which of the following diseases ?

a. Celiac disease
b. Meckel’s diverticulum
c. Whipple disease
d. Diverticular disease

Inflammatory bowel disease and Diverticular disease of colon (Quiz)

Acquired herniation of mucosa & submucosa through colonic muscle layer is a feature of which of the following diseases ?

a. Celiac disease
b. Meckel’s diverticulum
c. Whipple’s disease
d. Diverticular disease

Keypoints

- Crohn’s disease causes skip lesions of transmural inflammation
- Crohn’s disease : gross, microscopic and complications
- Ulcerative colitis is a disease of continuity
- Ulcerative colitis gross, microscopic and complications
- Inflammatory bowel disease may be associated with extraintestinal manifestations
- Diverticular disease :Acquired herniation of mucosa and submucosa through muscle layer

Thank you

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Suggested Textbooks

- Kumar V, Abbas A, Aster J : In Robbins and Cotran pathologic basis of disease, 10th edition. Elsevier Saunders. Chapter 16
- http://library.med.utah.edu/WebPath/GIHTML/GI020.html
- http://www.pathologyoutlines.com/stomach.html